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24 JUN 2003

REPUBLIEK VAN SUID-AFRIKA

DEPARTMENT OF TRADE
AND INDUSTRY

Certificate

PATENT OFFICE

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REC'D 30 JUN 2003

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PCT

Application forms P. 1 and P.3, provisional specification and
drawings of South African Patent Application No. 2002/4640 as originally
filed in the Republic of South Africa on 10 June 2002 in the name of
METAL BOX SOUTH AFRICA LIMITED for an invention entitled:
"PACKAGING".

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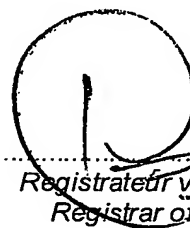
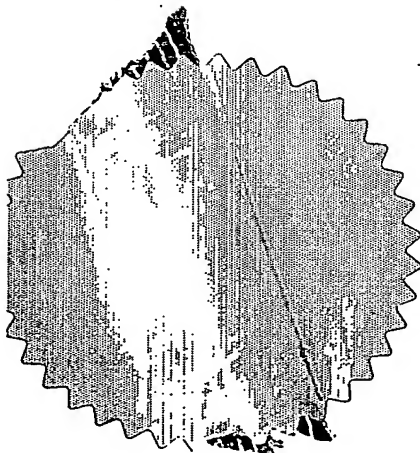
PRETORIA

In die Republiek van Suid-Afrika, hierdie
in the Republic of South Africa, this

4th

dag van
day of

June 2003



Registrateur van Patente
Registrar of Patents

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REPUBLIC OF SOUTH AFRICA
PATENTS ACT, 1978
APPLICATION FOR A PATENT AND
ACKNOWLEDGEMENT OF RECEIPT
(Section 30(1) Regulation 22)

FORM P.1
(to be lodged in duplicate)

REPUBLIC OF SOUTH AFRICA
REVENUE

10.6.02

R 060,00

THE GRANT OF A PATENT IS HEREBY REQUESTED BY THE UNDERMENTIONED APPLICANT
ON THE BASIS OF THE PRESENT APPLICATION FILED IN DUPLICATE

21 01 PATENT APPLICATION NO 2002/4640

A&A REF V.15248 AS/vd

71 FULL NAME(S) OF APPLICANT(S)

METAL BOX SOUTH AFRICA LIMITED

ADDRESS(ES) OF APPLICANT(S)

114 Dennis Road, Atholl Gardens,
Sandton, Gauteng Province,
Republic of South Africa

54 TITLE OF INVENTION

" PACKAGING "

Only the items marked with an "X" in the blocks below are applicable.

☐ THE APPLICANT CLAIMS PRIORITY AS SET OUT ON THE ACCOMPANYING FORM P.2. The earliest priority claimed is

Country:

No:

Date:

☐ THE APPLICATION IS FOR A PATENT OF ADDITION TO PATENT APPLICATION NO 21 01

☐ THIS APPLICATION IS A FRESH APPLICATION IN TERMS OF SECTION 37 AND BASED ON
APPLICATION NO 21 01

THIS APPLICATION IS ACCOMPANIED BY:

- ☒ A single copy of a provisional specification of 12 pages
- ☒ Drawings of 1 sheet
- ☐ Publication particulars and abstract (Form P.8 in duplicate) (for complete only)
- ☐ A copy of Figure of the drawings (if any) for the abstract (for complete only)
- ☒ An assignment of invention
- ☐ Certified priority document(s). (State quantity)
- ☐ Translation of the priority document(s)
- ☐ An assignment of priority rights
- ☐ A copy of Form P.2 and the specification of RSA Patent Application No 21 01
- ☒ Form P.2 in duplicate
- ☒ A declaration and power of attorney on Form P.3
- ☐ Request for ante-dating on Form P.4
- ☐ Request for classification on Form P.9
- ☐ Request for delay of acceptance on Form P.4
- ☐ Extra copy of informal drawings (for complete only)

74 ADDRESS FOR SERVICE: Adams & Adams, Pretoria

Dated this 10th day of June 2002


AV vR SCHWEIZER
ADAMS & ADAMS
APPLICANTS PATENT ATTORNEYS

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A&A P201

REGISTRAR OF PATENTS DESIGNS, TRADE MARKS AND COPYRIGHT
2002 -06- 10
REGISTRATEUR VAN PATENTE, MODELLE, HANDELSMERKE EN OUTEURSREG
REGISTRAR OF PATENTS

PATENT APPLICATION NO		
21	01	2002/4040

A&A Ref: V15248 AS/vd

LODGING DATE	
22	10 June 2002

FULL NAME(S) OF APPLICANT(S)	
71	METAL BOX SOUTH AFRICA LIMITED

FULL NAME(S) OF INVENTOR(S)	
72	ELBERS, Caspar Marinus Theodorus

EARLIEST PRIORITY CLAIMED	COUNTRY	NUMBER	DATE
33	NIL	31	NIL
32	NIL		

NOTE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

TITLE OF INVENTION	
54	" PACKAGING "

I/We

Yugenderan Mogamberry MOODLEY

hereby declare that :-

~~1. I/we am/are the applicant(s) mentioned above;~~

** 2. I/we have been authorized by the applicant(s) to make this declaration and have knowledge of the facts herein stated in the capacity of **LEGAL ADVISOR** of the applicant(s);


*** 3. the inventor(s) of the abovementioned invention is/are the person(s) named above and the applicant(s) has/have acquired the right to apply by virtue of an assignment from the inventor(s);

4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;

**** 5. ~~this is a convention application and the earliest application from which priority is claimed as set out above is the first application in a convention country in respect of the invention claimed in any of the claims; and~~

6. the partners and qualified staff of the firm of **ADAMS & ADAMS**, patent attorneys, are authorised, jointly and severally, with powers of substitution and revocation, to represent the applicant(s) in this application and to be the address for service of the applicant(s) while the application is pending and after a patent has been granted on the application.

SIGNED THIS 18th DAY OF FEBRUARY 2002


Company Name: **METAL BOX SOUTH AFRICA LIMITED**
Full Names: **YUGENDERAN MOGAMBERY MOODLEY**
Capacity of Signatory: **LEGAL ADVISOR**

(no legalization necessary)

- * In the case of application in the name of a company, partnership or firm, give full names of signatory/signatories. delete paragraph 1, and enter capacity of each signatory in paragraph 2.
- ** If the applicant is a natural person, delete paragraph 2.
- *** If the right to apply is not by virtue of an assignment from the inventor(s), delete "an assignment from the inventor(s)" and give details of acquisition of right.
- **** For non-convention applications, delete paragraph 5.

ADAMS & ADAMS
PATENT ATTORNEYS
PRETORIA

FORM P6

REPUBLIC OF SOUTH AFRICA
Patents Act, 1978

PROVISIONAL SPECIFICATION

(Section 30 (1) - Regulation 27)

21	01	OFFICIAL APPLICATION NO
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22	LODGING DATE
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10 June 2002

2002/4640

71	FULL NAME(S) OF APPLICANT(S)
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METAL BOX SOUTH AFRICA LIMITED

72	FULL NAME(S) OF INVENTOR(S)
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ELBERS, Caspar Marinus Theodorus

54	TITLE OF INVENTION
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" PACKAGING "

THIS INVENTION relates to packaging. More particularly, the invention relates to a process for producing packaging material suitable for, but not limited to, the packaging of foodstuffs. The invention also relates to an apparatus or installation for producing such packaging material, and to packaging material whenever produced in accordance with the process or by means of the apparatus or installation.

According to the invention there is provided a process for producing packaging material comprising a web of transparent flexible polymeric plastics film, the process including the steps of:

printing a portion of the surface of a major face of the web of said film with an embossing coating;

embossing the embossing coating printed on said major face by means of an optically variable device; and

after the embossing, metallising the entire surface of said major face with a metal coating,

the printing and the embossing being carried out in-line and continuously until the entire sheet or strip has been embossed, the strip being advanced past a series of work stations where the in-line process steps are respectively carried out, the series including a printing station where the printing of the embossing coating takes place and an embossing station, following the printing station, where the

embossing takes place, to produce a web of flexible polymeric plastics film having a major face which is partially embossed, the whole of the major face being metallised.

Process steps, other than in-line printing and embossing steps, may be carried out batchwise.

The embossing by means of an optically variable device may be by holographic embossing (two- or three-dimensional), although other types of embossing, such as stereographic embossing to produce stereograms, embossing by means of diffraction gratings and dot matrix embossing may be employed, using other optically variable devices.

The process may include the further step of colour-printing said major face of the web, prior to the metallising and optionally prior to the printing with the embossing coating, between the printing with the embossing coating and the embossing, or after the embossing, the colour-printing being carried out in-line with the printing with the embossing coating and in-line with the embossing, preferably being confined to the unembossed portion of the surface of said major face. In this regard, the embossed portion and/or the unembossed portion may extend continuously along the full length of the web, or one or both of these portions may be divided into separate parts, which may be spaced from one another; and the embossing and/or the arrangement of the portions may be such as to provide the

embossed web with one or more repeating patterns. In this context colour-printing includes printing with pigments which are white, black or grey, although these are not strictly speaking colours.

The process may include the further process step of laminating the embossed metallised web with a backing web of flexible polymeric plastics film, which may or may not be transparent, for example by adhesively securing the webs together by means of an adhesive, to provide a laminated composite packaging material, in which the embossed coating, the metal coating and any colour-printing are sandwiched between the webs so that the embossed metallised web is reverse-printed, the laminated composite material typically being slit lengthwise prior to finally being rolled into rolls.

More particularly, the web of film which is embossed and metallised, and the film of any backing web used, may be made from a member of the group of polymeric plastics materials comprising:

- polyesters;
- polypropylenes;
- polyethylenes; and
- polyvinyl chloride.

Of the above, it is expected that polyester films and polypropylene films will be preferred. It is further expected that vacuum-metallising techniques will be

employed for the metallising step, and that the metal used for the metallising step will be aluminium although, naturally, other metals and other metallising techniques can, if desired, be used. The embossing coating may be solvent-based and may be printed by means of a printing cylinder. A gravure printing technique may be employed, the cylinder forming part of a photogravure printing press, i.e. a so-called rotogravure printing press. Similarly, the embossing may be by means of an embossing cylinder, which may be holographically engraved or comprises holographically engraved shims, the embossing cylinder also optionally forming part of a gravure printing press, preferably the same press as comprises the cylinder used for printing the embossing coating. When colour-printing is employed, this may likewise be by means of a printing cylinder and may employ a gravure printing technique, this printing cylinder conveniently being part of the same gravure press of which the cylinders for printing the embossing coating and for embossing the embossing coating also form part, so that a single gravure press is employed for the process. In this case, if an eight-colour gravure printing press is used, up to six of its cylinders can be used for colour-printing, at separate stations, all in-line, separate and distinct from the embossing coating printing station and the embossing station.

The invention extends to an apparatus or installation for producing a packaging material, the apparatus or installation comprising:

an embossing coating printing station for printing an embossing coating on a portion of the surface of a major face of a web of transparent flexible polymeric

plastics film;

an embossing station for embossing an embossing coating printed on the web at the printing station; and

a metallising station for metallising both the coated and printed portion of the surface of said major face and the remainder of the surface of said major face, to metallise the entire surface of said major face, the printing station and the embossing station being arranged in-line, and the apparatus or installation being arranged and constructed to advance a web of flexible polymeric plastics film past said printing and embossing stations in turn.

Processing stations, other than in-line printing and embossing stations, may be arranged for batchwise processing.

The apparatus or installation may include at least one colour-printing station, arranged in-line with the above printing and embossing stations, for colour-printing a coloured coating on an uncoated portion of the surface of said major face. In a convenient embodiment of the apparatus or installation each printing station and the embossing station may form part of a common gravure printing press having a plurality of cylinders, each printing station and the embossing station being arranged in-line and comprising one of the cylinders of the press. The metallising station may in turn comprise a vacuum-metallising station, for vacuum-metallising the major face, with a metal such as aluminium. The apparatus or installation may also include a laminating station for laminating the sheet or strip

after the metallising thereof, with a backing web of flexible polymeric plastics film, an optional slitting station where the laminated product is slit into portions, and an optional rolling station where the slit film is rolled up into rolls.

The invention extends to flexible packaging material, whenever produced in accordance with the process described above, and/or whenever produced by means of the apparatus or installation described above.

The invention will now be described, by way of non-limiting illustrative example, with the reference to the accompanying diagrammatic drawing, in which the single Figure shows a schematic flow diagram of a process according to the present invention.

In the drawing, in which the flow diagram of the present invention is generally designated by reference numeral 10, a plurality of process stages or work stations are illustrated, interconnected by a plurality of flow paths or flow lines along which materials undergoing the process of the present invention are moved, to and past the various stations. Process steps are carried out at the various stations, which are shown associated with items of process equipment, connected thereto by process lines, indicating the process steps which are carried out thereby. Reference numeral 10 thus generally designates an apparatus or installation for carrying out the process of the present invention.

The installation 10 comprises a supply or store 12 of unprinted film such as polyester (PET), bi-axially oriented polypropylene (BOPP), polyvinyl chloride (PVC) or the like, in the present example, say, PET. The store 12 is shown connected by flow line 14 to a colour-printing station 16 which receives process input, designated by process line 18, from a printing cylinder 20 of a rotogravure printing press. Flow line 22 then leads from station 16 to an embossing coating printing station 24, which receives process input, designated by process line 26, from a further printing cylinder 28 of said rotogravure printing press.

From the station 24 flow line 30 leads to an embossing station 32 which receives process input along process line 34 from a yet further printing cylinder 36 of said rotogravure printing press, which cylinder 36 is holographically engraved. Instead, cylinder 36 may carry holographically engraved shims mounted thereon.

Flow line 38 in turn leads from station 32 to a metallising station 40, which receives process input along process line 42 from a vacuum-metalliser 44. From station 40 flow line 46 leads to a laminating station 48 which is supplied along process line 50 with process input from a laminator 52.

Flow line 54 leads from station 48 to a slitting station 56 which receives process input along process line 58 from a slitte 60; and flow line 62 leads from station 56 to a product store 64.

Finally, a supply or store 66 of sealant film, likewise polyester film, is shown feeding along flow line 68 into laminating station 48.

In accordance with the process of the invention a web in continuous strip form, of unprinted polyester film is fed from a roll thereof at the store 12 along flow line 14 to and past the colour-printing station 16 where the web receives, on a portion thereof, a reverse-printed colour coating along process line 18 from cylinder 20. The web then moves on from station 16 along flow line 22 to the embossing coating printing station 24, where it receives, on a different and as yet unprinted portion thereof, a reverse-printed embossing coating, along process line 26 from cylinder 28.

The web then moves on from station 24 along flow line 30 to embossing station 32, where, on the portion printed with embossing coating, it is reverse-printed with holographic embossing by process input along line 34 from engraved cylinder 36. The web then moves on along line 38 to the metallising station, where the entire printed surface thereof receives a reverse-printed metallising coating along process line 42 from the metalliser 44.

The web then moves on from station 40 along flow line 46 to the laminating station 48 where it receives laminating process input from laminator 52 along process line 50, being laminated at station 48 to a web of polyester laminating film, moving from store 66 along flow line 68 to station 48. The

laminated web then moves on along flow line 54 to slitting station 56 where it receives slitting process input from the slitter 60 along process line 58, and is longitudinally slit into longitudinally extending portions. Finally, the slit portions move along flow line 62 to the store 64 via a rolling station (not shown) where process input is provided which rolls the laminated film slit portions into rolls, which rolls move along line 62 to the store 64.

With regard to the foregoing, it should be noted that the process of the present invention illustrated in the drawings is a continuous (not batchwise) in-line process, with regard to the colour-printing, the printing with embossing coating, and the embossing in which the web of film from the store 12 is moved as a continuous web, either continuously or intermittently, as far as the embossing station 32. Thereafter, in the embodiment illustrated in the drawing, the succeeding process steps are carried out batchwise on the web, with regard to the metallising, the laminating, the slitting and the rolling.

It should further be noted that flow lines 14, 22, 30, 38, 46, 54, 62 and 68 are flow lines along which the webs move from stores 12 and 66, either separately or together after lamination thereof, from one process station to another, the colour-printing, embossing coating printing and embossing process stations respectively 16, 24 and 32 being arranged in-line. In contrast, the process lines 18, 26, 34, 42, 50 and 58 are not intended necessarily to indicate material flow, but rather the application of process input or process steps at the various

stations, by the plant or equipment associated with the respective stations, to the web passing to and past the stations. There will naturally be a flow of colour-printing material associated with line 18, a flow of embossing coating material associated with line 26, and a flow of metallising metal, say aluminium vapour, associated with line 42, but no material flow will take place along any of lines 34, 50 or 58.

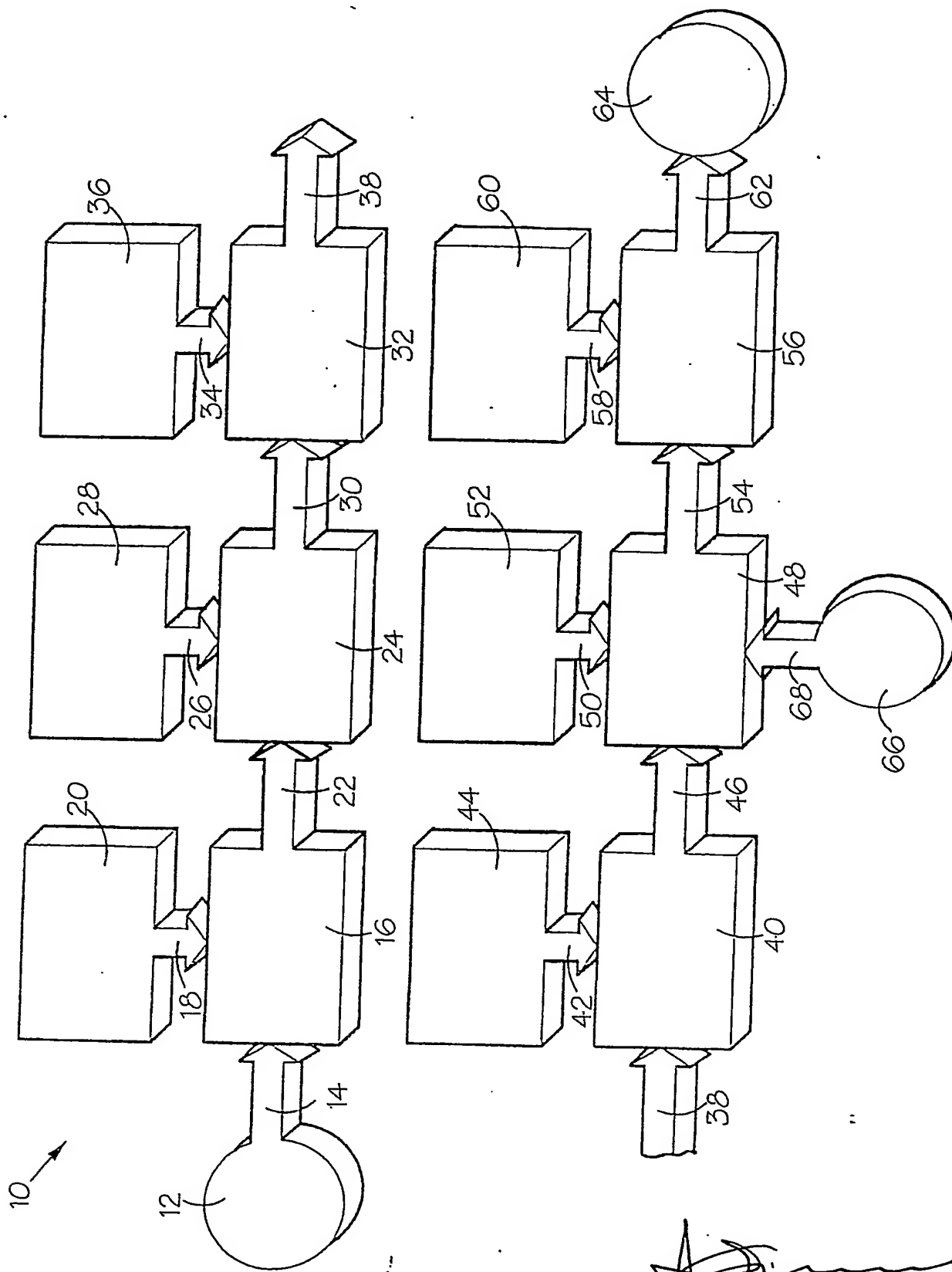
An advantage of the process as described above with reference to the drawing, is that it employs an at least partially in-line process in which a holographic coating is applied to a starting film which is then holographically embossed, the printing of the embossing coating and the embossing thereof being applied to only portions of the starting film, where required, and not to the remainder thereof. This has particular advantages compared with a process which employs a pre-holographically embossed starting film, all of which is embossed, including unnecessary holographic embossing on parts of the film intended to be colour-printed where such embossing is wasted. Furthermore, pre-embossed film, which is typically imported into South Africa, apart from being expensive, is generally available in a limited number of different embossed designs. Thus, apart from reducing the expensive embossing, flexibility in the designs used is promoted, particularly when engraved shims are employed on the embossing cylinder. Using a rotogravure press, embossing can be carried out on desired portions of the film and colour-printing can be carried out on other desired portions of the film, in an in-line process of relatively reduced cost having enhanced artistic possibilities. In

particular, it makes possible the embossing of corporate logos or brand names on the product holographically, which can assist in resisting counterfeiting, and can improve shelf-appeal of packaging made from the film.

Dated this 10th day of JUNE 2002.



AV vR SCHWEIZER
ADAMS & ADAMS
APPLICANT'S PATENT ATTORNEY



[Signature]

AV vR SCHWEIZER
ADAMS & ADAMS
APPLICANT'S PATENT ATTORNEY

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